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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,957	07/25/2006	Haim Livne	200400014-3	3393

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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

WRIGHT, KAINOA

ART UNIT	PAPER NUMBER
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2861

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/586,957	Applicant(s) LIVNE ET AL.	
	Examiner KAINOA BK WRIGHT	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-17,19-21 and 23-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,9-17,19-21,23,24 and 26-29 is/are rejected.
- 7) ☒ Claim(s) 7,8 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/25/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the limitation wherein, the feedback would be positive at the frequency of the vibrational mode if the sensor were to measure the deflector at a maximum of the vibrational mode, is not found within the specification. Because of the lack of description, the examiner is unable to understand the limitation in the context of the invention and examination is precluded.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 9-12, 14-15, 17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peled et al. (US 5268687) in view of Brown et al. (US 2002/0093258).

Regarding Claim 1 & 19: Peled teaches an image forming apparatus (Fig.1) comprising a photosensitive surface 8; a light source 10 which produces at least one scanning beam; a deflector 12 which deflects the scanning beam onto the photosensitive surface 8; a sensor 22 which measures the orientation of the deflector (col.3, ll.20-23); a controller 29 (32) which determines a placement error of the scanning beam on the photosensitive surface (an error in the deflector angle translates to an error in the position of the scanning beam) responsive to the orientation measurement by the sensor (Fig.2); an actuator 18, responsive to the displacement error, and arranged to change the direction of deflection of the scanning beam by the deflector (via closed loop servo circuit 30).

Peled fails to teach the sensor configured to measure the orientation of the deflector substantially at a null vibration mode of the deflector.

Brown teaches positioning a sensor, configured to measure the orientation of a deflector, at a null position of the fundamental torsional resonance mode of the deflector (abstract), in order to eliminate feedback resulting from resonance.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Peled to include the teachings of Brown such that the sensing of the orientation of the deflector took place at a null position in order to eliminate feedback resulting from resonance.

Regarding Claims 2, 4, 20: Peled further teaches the photosensitive surface is a moving cylindrical surface.

Regarding Claims 3, 21: Peled teaches the controller determining the placement error relative to a desired position of the photosensitive surface (col.4, ll.15-20).

Regarding Claims 9-10, 26-27: The above combination includes teachings of the vibrational mode being the lowest (i.e. fundamental) vibrational mode and being a torsional mode (see above).

Regarding Claims 11, 28: The above combination provides for measurement generally at a null position (see above). Peled teaches the deflector being an elongated mirror (Fig.1). The elongated mirror structure has a known null position at its center in the scan direction, hence the null position being at the center is taught by the above combination.

Regarding Claims 12, 29: Peled teaches the deflection of the scanning beam being controlled in a closed loop system, utilizing the sensor measurement as a feedback signal (Fig.2).

Regarding Claim 14: Peled teaches the actuator 18 located at one end of the deflector 12 which rotates the deflector around an axis parallel to the scan direction (Fig.1), and wherein the sensor measures the orientation of the deflector (col.3, ll.20-23).

Regarding Claim 15: Peled teaches the deflector as a mirror 12.

Regarding Claim 17: Peled teaches the imager being a printer or a copier (col.1, ll.10-15).

5. Claims 6, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peled et al. (US 5268687) in view of Brown et al. (US 2002/0093258) as applied to claim 1 above, and further in view of Vogler et al. (US 2003/0033112).

Peled in view of Brown teaches an image forming apparatus having a deflecting mirror whose angular position is determined by a sensor, wherein position errors are adjusted accordingly.

Peled in view of Brown fails to teach the sensor being an optical sensor.

Vogler teaches an optical sensor (Fig.1) for detecting an angular position of a movable mirror 10, for the purpose of controlling the angular position of the mirror with a closed loop control circuit to correct for a positioning error of the mirror [0031-0033]. Vogler also teaches this optical sensor being using for correcting mirror positions within scanning devices [0035].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Peled in view of Brown to include the teachings of Vogler in order to provide a high precision mirror position sensing system.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peled et al. (US 5268687) in view of Brown et al. (US 2002/0093258) as applied to claim 1 above, and further in view of Zelenka (US 2002/0167584).

Peled in view of Brown teaches an image forming apparatus having a deflector whose angular position is determined by a sensor, wherein position errors are adjusted accordingly.

Peled in view of Brown fails to teach the deflector being a prism.

Zelenka teaches the interchangeability of mirrors and prisms for deflectors [0034].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Peled in view of Brown to include the teachings of Zelenka in order to provide a readily available substitute deflector.

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peled et al. (US 5268687) in view of Brown et al. (US 2002/0093258) as applied to claim 1 above, and further in view of Jin (US 2003/0234856).

Peled in view of Brown teaches an image forming apparatus having a photosensitive member.

Peled in view of Brown fails to teach the photosensitive member being a belt.

Jin teaches the interchangeability of drums and belts as photosensitive members [0005].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Peled in view of Brown to include the teachings of Jin in order to provide a readily available substitute photosensitive member.

Allowable Subject Matter

8. Claims 7-8 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claims 7, 25: Although an optical sensor used for determining and correcting an error in the angular positioning of a beam deflector within an image forming apparatus is considered by the examiner to be known or obvious with respect to the prior art, the specifics of the optical sensor which are adapted specifically to the above mentioned circumstance is considered to be novel and unobvious. Specifically, the imager of the present invention wherein the sensor comprises a second light source that produces a second light beam which is deflected from a second deflector positioned on the deflector, or the support of the deflector, and is sensed by an optical position sensor, is considered to be unobvious with respect to the prior art.

Regarding Claim 8: The claim is allowable for containing the allowable subject matter of claim 7 from which it depends.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAINOA BK WRIGHT whose telephone number is (571)272-5102. The examiner can normally be reached on M-F 8:00am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kainoa BK Wright/
Examiner, Art Unit 2861
4/22/08

/Hai C Pham/
Primary Examiner, Art Unit 2861